REMARKS

Applicants herewith affirm the previously-made election without traverse of the election of claims 18-31, in response to the previously-made restriction requirement.

Claims 18 and 25-29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bakels et al in view of an article by Geddes et al. This rejection is respectfully traversed for the following reasons.

In substantiating the aforementioned rejection, the Examiner stated that the Bakels reference discloses measuring an impedance representative of a change in a volume of the left atrium of the heart of the patient. The Examiner cited Figures 2A, 2B, 8B and column 2, lines 55-66 of the Bakels et al reference in substantiation of this statement.

Applicants submit that these citations in the Bakels et al reference merely provide general statements regarding measuring impedance, and do not provide any statement that an impedance signal is obtained that represents a change in the volume of the left atrium of a patient's heart. At the locations in the Bakels reference where details are, in fact, given with regard to the impedance measurement, those details teach that the impedance measurement in Bakels et al is made for a different purpose. In the paragraph bridging columns 6 and 7 of Bakels, for example, it is stated that the impedance signal is processed to make a determination of cardiac output. Making a determination of cardiac output, however, is not the same as obtaining a signal that is representative of the volume of the left atrium. Cardiac output is conventionally determined as stroke volume divided by heart rate.

Of course, it is true that, in general, a measurement of impedance is a measurement of blood volume, but it is of course important to place the leads that

make the impedance measurement at an appropriate location so that a particular volume is being determined, and it is also important to then analyze the impedance signal consistent with the goal of extracting the desired information therefrom, or obtaining the desired information by manipulating the impedance signal in a particular manner.

The measurement and analysis of impedance in Bakels et al are disclosed as being for no purpose other than determining the aforementioned cardiac output, because this is the characteristic or value that is intended to be used in the Bakels et al reference for controlling pacing.

Since the Bakels et reference does not disclose obtaining an impedance signal that represents a change in the volume of the left atrium, there is no disclosure in the Bakels et al reference to analyze such an impedance signal in the manner set forth in claim 17 of the present application, by determining a quotient between a minimum value of the impedance signal and a maximum value of the impedance signal during a cardiac cycle of the heart, nor is there any teaching in the Bakels et al reference to use that quotient to detect congestive heart failure, as also set forth in claim 17.

The Examiner relied on the Geddes reference as providing a teaching to obtain a quotient of minimum and maximum impedances, but again this is for the purpose of determining stroke volume. Applicants respectfully submit that even if the Bakels et al reference were modified in accordance with the teachings of Geddes et al, this would merely mean that the quotient formation disclosed in Geddes would be used to identify the stroke volume which would then, in turn, be used in the Bakels et al reference to determine the cardiac output.

None of claims 18 or 25-29, therefore, would have been obvious to a person of ordinary skill in the field of treating congestive heart failure, under the provisions of 35 U.S.C. §103(a), based on the teachings of Bakels et al and Geddes et al.

Claims 16-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bakels et al and Geddes et al, further in view of Pitts Crick et al. Claim 30 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bakels et al and Geddes et al, further in view of Bernstein et al. Claim 31 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bakels et al and Geddes et al, further in view of Feldman.

Since each of these independent claims embodies the subject matter of claim 18 therein, the above arguments concerning the Bakels et al and Geddes et al references are applicable to these rejections as well. Even if the Examiner is correct in describing the teachings of the additional secondary references, modifying the Bakels et al/Geddes et al combination in accordance with the teachings of those further reference still would not result in the subject matter of any of these dependent claims, for the reasons discussed above in connection with independent claim 18.

All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required, or to credit any overpayment to account No. 501519.

Submitted by,

(Reg. 28,982)

SCHIFF, HARDIN LLP
CUSTOMER NO. 26574
Patent Department
6600 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606
Telephone: 312/258-5790
Attorneys for Applicants.

CH1\6074899.1